Voice Integrated Development Environment for People Who Are Blind, Myopia Affected or Have RSI

Marusic, Diana

The purpose of the project was to build an Integrated Development Environment that gives blind, visually impaired or people suffering of Repetitive Strain Injuries that have no experience in programming an opportunity to learn a programming language and code. The application uses Java, Microsoft SAPI and Speech SDK, CloudGarden's implementation of Sun's Java Speech API for implementing vocal commands, human-computer interaction and providing learning tools. Each captured word after recognition is repeated by the computer, which allows users to know what was written on the screen and better memorize the source code. Some parts of the code are generated automatically, according to the syntax of the language. This reduces the time and helps to avoid some of the most frequent beginner mistakes. The users are taught programming by special created audio help assistance. Pascal programming language was selected for its syntax close to natural speaking, but any other language can be used by replacement of rules and syntax. A special pseudocode was designed for creating simple programs and learning the basics of programming. It is automatically transformed into Pascal code before compilation. FreePascal was used for compilling the source code. Time evolution of recognition efficiency of vocal commands and noise influence on system performance was tested. After 22 days, the efficiency increased up to 97% on average. Created tools have no special requirements and besides benefits for disabled people, they can help to reduce the risk of developing programmer's myopia, especially in young people.

Awards Won: